

Public Health Assessment

Lightman Drum Company Site

CERCLIS No. NJD014743678

Winslow Township, Camden County, New Jersey

March 26, 2001

Prepared by:

Hazardous Site Health Evaluation Program
Consumer and Environmental Health Services
Division of Epidemiology, Environmental and Occupational Health
New Jersey Department of Health and Senior Services

Under a Cooperative Agreement with:

The Agency for Toxic Substances and Disease Registry

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Summary

The Lightman Drum Company (LDC) site is located at 139 Route 73 North, Winslow Township, Camden County, New Jersey. The LDC site is situated on approximately 15 acres located in a semi-rural area. Over years of operation, the LDC has been cited by the New Jersey Department of Environmental Protection (NJDEP) for numerous environmental violations. These violations have included the storing of illegal wastes and unlawful discharges of hazardous chemicals. The LDC site is currently an active drum brokerage facility, selling used and reconditioned drums. However, from 1974 through the mid to late 1980's, LDC operated an industrial waste hauling and drum reclamation business where empty drums and drums filled with wastes were stored. Due to the activities at the site, both the on-site soil and groundwater at LDC were contaminated. The site was proposed for inclusion to the National Priorities List (NPL, a.k.a. Superfund) on July 26, 1999.

The Agency for Toxic Substances and Disease Registry (ATSDR) and the New Jersey Department of Health and Senior Services (NJDHSS) have not identified completed human exposure pathways associated with the LDC site. However, on-site soil and groundwater contamination is present at levels of potential public health concern. There are both public and private water supply wells within a mile of the site downgradient, that utilize the Kirkwood-Cohansey Aquifer, and may be potentially threatened by the LDC site. The potential for off-site groundwater contamination has not yet been determined at the LDC site.

Because there is insufficient information to confirm or dismiss the existence of off-site exposure pathways, the ATSDR/NJDHSS have evaluated the LDC site to currently represent an **indeterminate public health hazard**.

Ongoing remedial investigation at the LDC site is planned by USEPA to begin in Fiscal Year 2001. As new data and information become available, the ATSDR/NJDHSS will reconsider the public health implications of the LDC site as necessary. The NJDHSS and the ATSDR believe that conditions warrant ongoing environmental investigation of the LDC site to fully characterize the nature and extent of contaminated environmental media, and to determine the extent of off-site migration of contaminants.

Purpose and Health Issues

This Public Health Assessment evaluates the public health issues associated with the Lightman Drum Company site which was proposed for inclusion on the National Priorities List (NPL) on October 22, 1999. NPL or "Superfund" sites represent those sites which are associated with significant public health concern in terms of the nature and magnitude of contamination present and the potential to adversely impact the health of populations in their vicinity.

This document will, where possible, evaluate human exposure pathways associated with known contaminated environmental media within or associated with the Lightman Drum Company site and recommend actions consistent with protection of the public health. At the Lightman Drum Company site, the known contaminated media include on-site soils and groundwater.

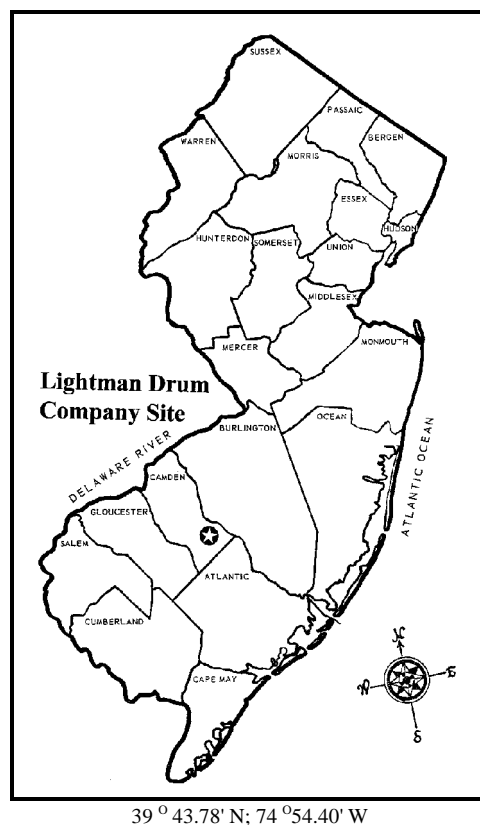
Background

Site Description and History

The Lightman Drum Company (LDC) site is located at 139 Route 73 North, Winslow Township, Camden County, New Jersey (inset). The LDC site is situated on approximately 15 acres located in a semi-rural area.⁽⁴⁾ The site is bounded by: Route 73 (Cedarbrook Road) to the east; the right-of-way of the Camden-Winslow branch of the Conrail railroad, and an area of wetlands which flows into the Pump Branch to the west; farmland to the northwest and southwest; and residential homes and commercial businesses to the north and south along Route 73 (Figure 1).

The LDC site is currently an active drum brokerage facility for selling used and reconditioned drums. Approximately one-third of the eastern portion of the property is used for this operation. The remainder of the 15 acres is unused forested land with the far western edge containing a wetlands area.

From 1974 through the mid to late 1980's, the LDC operated an industrial waste hauling and drum reclamation business where empty drums and drums filled with wastes were stored. Drums containing unknown quantities of contaminants were brought onto the LDC site. The drums were sorted and shipped to other facilities for reclamation. Reportedly, drums containing paint thinners, paints, inks, solvents, undercoatings, acids, waste oil, pesticides and glues were brought to the LDC site.



According to available information, during the first six months of operation, the LDC dumped materials found in the drums either directly onto the ground or into an unlined pit. This pit (5' X 7' X 5' deep) was located on the western portion of the property. In 1977, LDC installed two 5,000 gallon underground storage tanks on the property. These tanks were used to store the consolidated chemical residues from the drums. These underground storage tanks were removed in early 1984.

Chemical residues from drums were also consolidated into over-the-road tanker trailers or in other 55 gallon drums, and stored until disposal. For a limited time (1978 to 1979) the facility was permitted by NJDEP to accept hazardous waste.

Over the years of its operation, the LDC has been cited by NJDEP for numerous environmental violations. These violations have included storing illegal wastes, unlawful discharges of hazardous chemicals to the environment, and other violations of environmental regulations. In 1985, the LDC's warehouse building burned down. The cause of the warehouse fire was found to be "undetermined" by the Camden County Fire Marshal.

In 1987, the NJDEP's monitoring and legal actions led to the discovery and investigation of volatile organic chemical and heavy metal contamination in the soils at the site. The NJDEP's investigations also documented that the groundwater underlying the site was contaminated as a result of the company's operations.

The NJDEP issued an Administrative Order on April 12, 1988, which required LDC to prepare a Remedial Investigation (RI) at the site. In 1989, the Lightman Drum Company hired an environmental contractor, International Exploration, Inc., to perform a RI. The RI included the installation of six monitoring wells and sampling of groundwater to help characterize the site. The RI noted that both the on-site soil and groundwater at the LDC were contaminated.⁽¹⁾

In 1990, International Exploration, Inc., performed a Phase II RI for the LDC. The Phase II RI was intended to delineate the groundwater and soil contamination found during the original RI. The work included the installation of six additional on-site monitoring wells, additional soil and groundwater sampling, a door-to-door well search within one-mile of the site, and an electromagnetic survey to locate buried drums.⁽²⁾

The LDC site was designated by the USEPA for inclusion to the National Priorities List (NPL, a.k.a. Superfund) on July 26, 1999.⁽³⁾

Demography and Land Use

The LDC site is located in a mixed residential and rural area. There are no school or day care facilities on or within 200 feet of the property.

There are both public and private potable water supply wells within a mile of the site which

utilize the Kirkwood-Cohansey Aquifer (the aquifer underlying the site) as a source of drinking water. The Winslow Township Water and Sewer Company (WTWSC) has eight of its nine supply wells located within a 4-mile radius of the LDC site. The closest WTWSC public water supply is located approximately one mile south of the site.⁽⁴⁾ Groundwater from each individual well house pumping station is blended into a common distribution line, serving a total population of about 39,025 people. The WTWSC also sells bulk water to the Waterford Township Municipal Utilities Authority, which supplies drinking water for about 1,329 people in that Township. WTWSC also is interconnected with the Berlin Public Works.

Residents near the LDC site who are not connected to the WTWSC water supply use private wells for their source of potable water. According to the USEPA⁽⁴⁾, there are approximately 334 dug wells and 3,714 drilled wells supplying potable water to 11,801 residents within a 4-mile radius of the site. About 53 of these private wells are within 0.25 miles of the site. The closest private well is located approximately 100 feet south-southeast and downgradient of the LDC property line.

Population demographics based upon the 1990 census have been prepared by the ATSDR using area-proportion spatial analysis, and are presented in Figure 3. Within a one mile radius there are approximately 356 homes with as many as 1,126 people.

There is a small stream, known as the Pump Branch, that is located about 40 feet from the western border of the site. The Pump Branch flows southeast from the site into the Albertson Brook.

Past ATSDR/NJDHSS Involvement

There have been no ATSDR/NJDHSS activities at the Lightman Drum Company site prior to the April 11, 2000 site visit.

Site Visit

On April 11, 2000, S. Kubiak, J. Pasqualo, S. Tsai and J. Winegar of the New Jersey Department of Health and Senior Services (NJDHSS) visited the Lightman Drum Company (LDC) site. The NJDHSS was accompanied by C. Agnew of the ATSDR Regional Office. In addition, present at the site visit were representatives of the USEPA, NJDEP and the Camden County Health Department (CCHD). The site tour was conducted by the owner of the property, Mr. Jerome Lightman. The following observations were made during the site visit:

- # The LDC site is a long, narrow rectangular area of about 15 acres. The site is located in a rural area with a mix of light industrial and residential properties.
- # LDC is an active facility with several small buildings, a concrete pad, and an office. The site currently operates under the name "United Cooperage." The business receives used, empty (<1" of residue) chemical and food product drums and containers. The drums and containers

are either crushed and sold as scrap, or they are sold to others as reusable containers.

- # Almost half of the property appeared to be covered with thousands of empty chemical and food drums and containers of many sizes and shapes. There were numerous truck trailers located on the property. The trailers appeared to be at various stages of being filled or emptied of drums. Also observed was a drum crushing area.
- # Although a perimeter fence borders a portion of the LDC site, the LDC site is not totally protected from access by trespassers. Lack of a continuous fence around the LDC site could make trespassing on the LDC site possible. In fact, the following items were found in the wooded area on the western side of the property; a liquor bottle, empty milk crate, and boards nailed to a tree. Trash items were also found on the wooded area on the northern side of the property. During the summer months there is considerable overgrowth on the western and northern sides of the property hindering access. The property owner did not complain of any problems with trespassers.
- # There were numerous hummocks noted in the wooded area on the western side of the property.
- # There are numerous residences in the vicinity of the site that are known to have private wells. Many have been tested by CCHD and NJDEP, and some wells show chemical contamination. It is not known at this time, however, if this contamination is related to the LDC site. According to the CCHD, there are other possible sources of groundwater contamination in the region.

Discussion

On-Site Contamination

On-Site Soils

During the Phase II RI in 1990, a total of 43 surface and sub-surface soil samples were collected by a contractor for Lightman Drum Inc., International Exploration, Inc. These soil samples were taken from various drum storage areas, monitoring wells, wooded areas, trailer parking areas, and in the areas of the excavated underground waste storage tanks. The depth of soil samples ranged from 6 inches to 50 feet. Volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), heavy metals and pesticides were detected on-site. Significant levels of trichloroethylene (TCE), tetrachloroethylene (PCE), toluene, xylenes and ethylbenzene were detected in soil borings from monitoring well MW8B and at the west side of underground diesel fuel tank excavation (Figure 2). Table 1 reports the list of contaminants found at levels approaching or exceeding comparison values, and the maximum concentrations detected from on-site soils including VOCs, SVOCs, metals

and pesticides.⁽²⁾

On-Site Groundwater

During the Phase II RI in 1990, a total of 12 monitoring wells were sampled by International Exploration, Inc. (Figure 2). Table 2 reports the contaminants and the maximum concentrations detected from on-site monitoring wells detected at levels in excess of New Jersey drinking water standards, including VOCs, SVOCs, total phenolics and metals. Monitoring wells MW2 and MW8A yielded high levels of VOCs and SVOCs from this initial investigation period. High levels of TCE, PCE, benzene, toluene, xylenes, ethylbenzene and methylene chloride were detected in these wells. The groundwater flow direction is southeast on-site.⁽¹⁾ MW8A was placed in a downgradient direction from the excavated underground storage tank area. This well was intended to monitor the water quality and the possibility of a contaminant plume traversing the site boundary. The high concentrations of organic compounds detected in samples from MW8A suggest that the downgradient extent of the plume may have migrated off-site.⁽²⁾

On November 5, 1999, the RT Environmental Services, Inc. (a contractor of the Lightman Drum Company) conducted groundwater sampling from five of the 12 on-site monitoring wells. These wells were installed in 1989 and 1990 during the Phase I and Phase II RI under the NJDEP 1988 order. Table 3 reports the contaminants and their concentrations detected in monitoring wells MW2, MW3, MW5, MW9 and MW10. Significant levels of TCE, PCE, benzene, toluene, xylenes and ethylbenzene were detected in MW2 (near the tank excavation area) and MW10 (near the southern drum area).⁽⁶⁾ Well MW8A was not sampled during this round of investigation.

Other On-Site Media

No surface water, air, or sediment samples were collected in either the Phase I or the Phase II RI. (The nearest surface water is the Pump Creek, which borders the western property line of the site.)

Off- Site Contamination

There are no data or other information presently available to the NJDHSS and the ATSDR describing contamination of any off-site environmental media

Because of the extent of on-site groundwater contamination, the possibility of off-site groundwater contamination is a concern in the context of potential exposure pathways. However, no off-site monitoring wells presently exist at the LDC site; the nature and extent of any contamination plume (if present) from the site is unknown at this time.

Additional study of the potential effects of the LDC on off-site groundwater is currently being

planned by USEPA (personal communication). The USEPA will be testing numerous residential wells within one-half mile, both upgradient and downgradient, of the site. Results of this well testing will be reviewed by NJDHSS/ATSDR when available. Monitoring wells located on the LDC property will also be tested.

Pathways Analysis

This section contains discussion of the exposure pathways at the site and their public health implications, if applicable. An exposure pathway is the process by which an individual is exposed to contaminants that originate from some source of contamination. ATSDR/NJDHSS classifies exposure pathways into three groups: (1) “**completed pathways**,” that is, those in which exposure has occurred, is occurring, or will occur; (2) “**potential pathways**,” that is, those in which exposure might have occurred, may be occurring, or may yet occur; and (3) “**eliminated pathways**,” that is, those that can be eliminated from further analysis because one of the five elements is missing and will never be present, or in which no contaminants of concern can be identified.⁽⁵⁾ A completed exposure pathway must include each of five elements that link a contaminant source to a receptor population. The five elements of a completed exposure pathway are the following: (1) source of contamination; (2) environmental media and transport mechanisms; (3) point of exposure; (4) route of exposure; and (5) receptor population.

Based upon current site conditions and information available to the ATSDR and the NJDHSS, there are no documented completed human exposures to site-related contamination in the following media: on-site groundwater, sediments, surface water, and air. A potential pathway to on-site soils may exist through unauthorized access; however trespassing is not likely to occur at a frequency which constitutes a public health concern.

The primary potential off-site exposure pathway pertains to groundwater contamination and its impact on the Kirkwood-Cohansey Aquifer, which is a significant source for public and private potable water supplies in the area. The LDC site has not, at this time, been identified as a source of off-site groundwater contamination. Thus, elements 1 and 2 listed above have not been determined.

In other areas of Winslow Township presently under investigation by the NJDEP and the CCHD, exposures to contaminated groundwater in residential wells has occurred in the past. However, because the contamination source has not been determined, no completed potential pathway related to the LDC site can be established. Residents with contaminated wells have had exposure minimized or eliminated with the installation of a point of entry treatment (POET) systems.

Public Health Implications

Based on currently available data, there were no identified completed exposure pathways associated with the site to be evaluated at this time.

Health Outcome Data

Based on currently available data, there were no identified completed exposure pathways associated with the site, therefore no health outcome data was evaluated at this time.

ATSDR Child Health Initiative

ATSDR's Child Health Initiative recognizes that the unique vulnerabilities of infants and children demand special emphasis in communities faced with contamination in their environment. Children are at greater risk than adults from certain kinds of exposures to hazardous substances emitted from a waste site. They are more likely to be exposed because they play outdoors and they often bring food into contaminated areas. They are shorter than adults, which means they breathe dust, soil, and heavy vapors closer to the ground. Children are also smaller, resulting in higher doses of chemical exposure per body weight. The developing body systems of children can sustain permanent damage if toxic exposures occur during critical growth stages. Most important, children depend completely on adults for risk identification and management decisions, housing decisions, and access to medical care.

Under current conditions, there were no identified completed exposure pathways associated with the LDC site. If site conditions change that result in potential exposures to children or pregnant women, the NJDHSS/ATSDR will reexamine childhood health issues at the LCD site.

Community Health Concerns

In order to gather information on community health concerns at the Lightman Drum Company (LDC) site, NJDHSS spoke with the Camden County Health Department (CCHD) and its Division of Environmental Health. According to conversations with a local official (4/11/00), current community concerns have been centered on area residents' potable wells. These concerns are being addressed by the NJDEP and CCHD through a well testing program.

There have been community concerns and citizen complaints concerning the LDC site since it began operations in 1974. Complaints about the site to the CCHD and NJDEP have included: chemical odors, excessive noise, airborne particulates (from the dirt driveway), and the dumping and spilling of chemicals from drums onto the ground or into a pit. These complaints have been addressed by these two agencies. The ATSDR and the NJDHSS will review and evaluate any community health concerns which may arise as a result of ongoing remedial activity at the LDC site.

Conclusions

Hazard Category: Lightman Drum Company Site

Because there is insufficient information to confirm or dismiss the existence of off-site exposure pathways, the ATSDR/NJDHSS have evaluated the LDC site to currently represent an **indeterminate public health hazard**.

Although the ATSDR and the NJDHSS have not identified completed human exposure pathways associated with the LDC site, on-site soil and groundwater contamination is present at levels of potential public health concern. Data collected from on-site monitoring wells have identified groundwater contamination under the LDC site that may extend off-site. Groundwater contaminants are present at levels above ATSDR Comparison Values and/or NJMCLs and thus represent a potential public health concern.

The results of nearby residential well testing have shown that some of these wells have been impacted by an undetermined contaminant source. Many of these residences are not connected to the public water supply system in the area. However, residents with qualifying contaminated wells have been helped with the installation of point of entry treatment (POET) systems.

Recommendations

Cease/Reduce Exposure Recommendations

1. It is prudent to continue the restriction of public access to contaminated areas of the site.
2. Residents utilizing private potable wells should take appropriate measures to insure water quality including periodic testing and maintenance of filtration systems as necessary.
3. As new site data and information are available, the ATSDR and NJDHSS will review the potential public health implications of the site as warranted.

Site Characterization

The NJDHSS and the ATSDR believe that conditions warrant ongoing environmental investigation of the LDC site to fully characterize the nature and extent of contaminated environmental media, and to determine the extent of off-site migration of contaminants.

Public Health Action Plan

The Public Health Action Plan (PHAP) for the Lightman Drum Company (LDC) site contains a description of the actions to be taken by ATSDR and/or NJDHSS at or in the vicinity of the site subsequent to the completion of this Public Health Assessment. The purpose of the PHAP is to ensure that this health assessment not only identifies public health hazards, but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment. Included is a commitment on the part of ATSDR/NJDHSS to follow up on this plan to ensure that it is implemented. The public health actions to be implemented by ATSDR/NJDHSS are as follows:

Public Health Actions Taken

1. Available environmental data and other relevant information for the LDC site have been evaluated to determine human exposure pathways and public health issues.

Public Health Actions Planned

1. ATSDR and the NJDHSS will coordinate with the appropriate environmental agencies to develop plans to implement the cease/reduce exposure and site characterization recommendations and will evaluate new site data when it becomes available.
2. The NJDHSS will prepare a site specific public health fact sheet for the LDC site which will be made available to local health agencies and other interested parties.
3. The ATSDR/NJDHSS will plan a public availability session to complement the Public Comment Release of this document.
4. This Public Health Assessment will be placed in a local repository, and will be provided to persons who request it.
5. The ATSDR and the NJDHSS will reevaluate and expand the Public Health Action Plan (PHAP) as warranted. New environmental, toxicological, or health outcome data, or the results of implementing the above proposed actions, may determine the need for additional actions at this site.

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3. US Environmental Protection Agency, NPL Site Narrative at Listing, Lightman Drum Company Site, Winslow Township, NJ, December 20, 1999.
4. Foster Wheeler Environmental Corporation, Draft Site Inspection Prioritization (SIP), Lightman Drum Company Site, Winslow Township, Camden County, New Jersey, September 1997.
5. Agency for Toxic Substances and Disease Registry. Health Assessment Guidance Manual. Chelsea, Michigan: Lewis Publishers, 1992.
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Figures

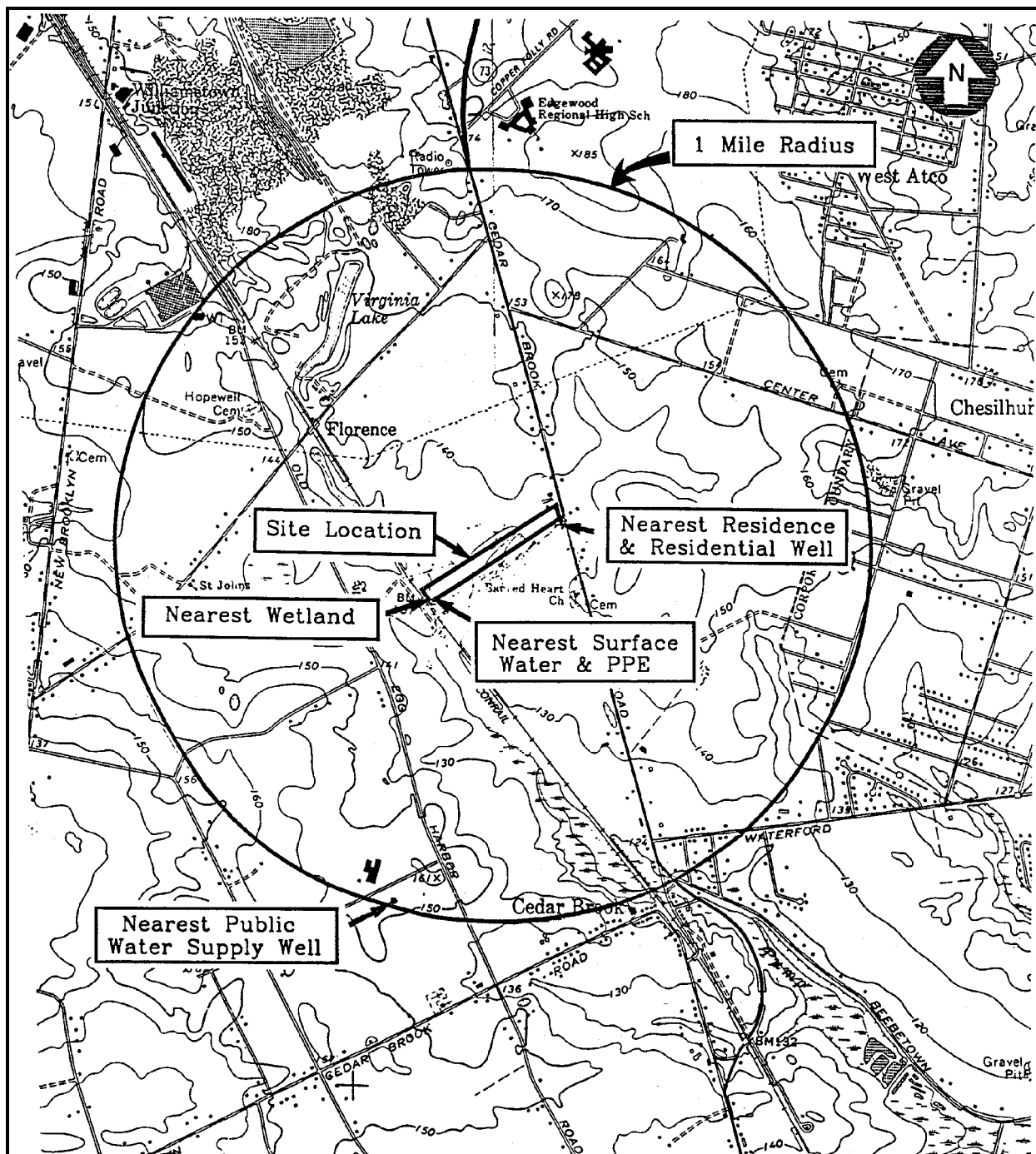


Figure 1. Lightman Drum Company, Site Map
Adapted from Foster Wheeler

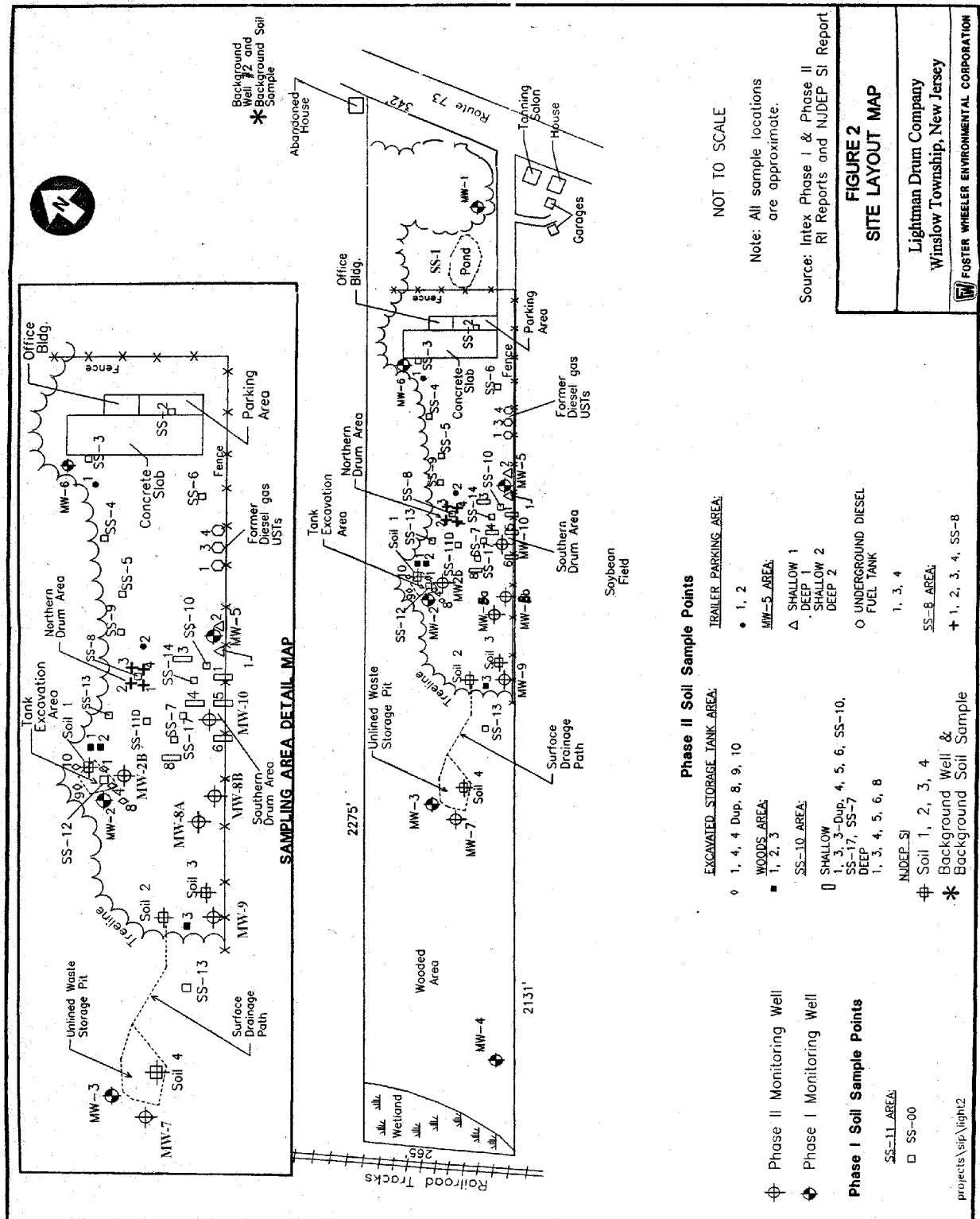
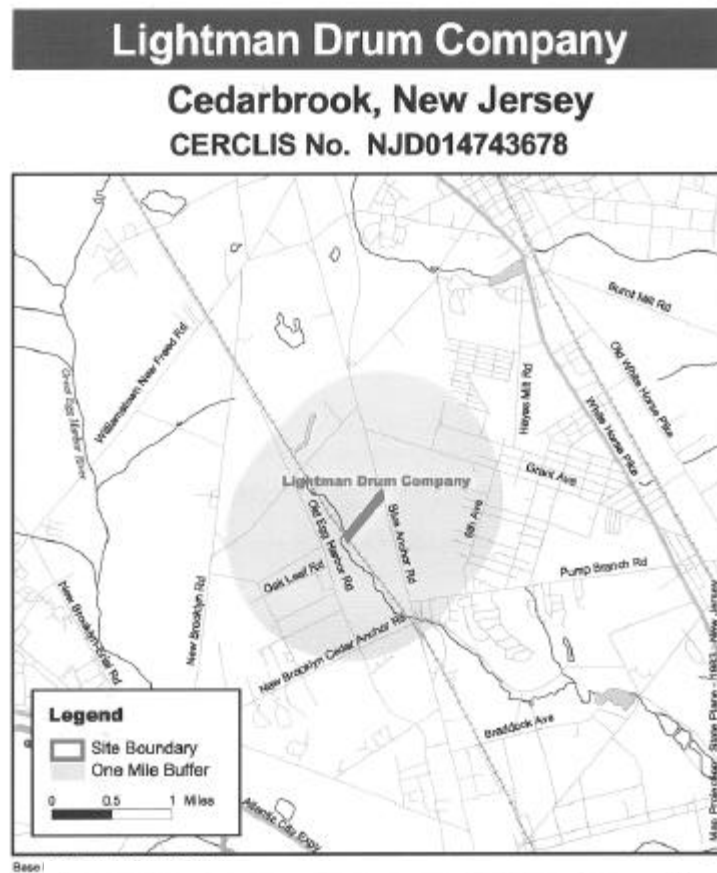


Figure 2 - LDC Site layout map.



Demographic Statistics Within One Mile of Site*	
Total Population	1126
White	819
Black	286
American Indian, Eskimo, Aleut	10
Asian or Pacific Islander	1
Other Race	4
Hispanic Origin	19
Children Aged 6 and Younger	123
Adults Aged 65 and Older	136
Females Aged 15 - 44	245
Total Housing Units	356

Demographics Statistics Source: 1990 US Census

*Calculated using an area-proportion spatial analysis technique

Figure 3 - Site Demographics

Tables

Table 1. Maximum Concentrations of Selected Contaminants Detected in On-Site Soils at Levels Approaching or Exceeding Comparison Values, Lightman Drum Company Site, October 1990.

Volatile Organic Compounds	Maximum (mg/kg)	Comparison Values(mg/kg)*	Soil Depth (ft)
Ethylbenzene	1,210	5,000 RMEG child	8-17
Tetrachloroethylene	83.1	500 RMEG child	8-17
Toluene	221	1000 EMEG child	8-17
Trichloroethylene	73	54 (NJ non-residential soil clean-up criteria)	8-17
Xylenes (total)	8,190	10,000 EMEG child	8-17
Semi-volatile Organic Compounds			
Bis (2-Ethylhexyl) Phthalate	18	50 CREG	0.5-2
1,2-Diphenylhydrazine	1.94	0.9 CREG	8-17
Metals			
Antimony	10	20 RMEG child	0.5-2
Arsenic	14	0.5 CREG	0.5-2
Cadmium	8.5	10 EMEG child	0.5-2
Silver	70	300 RMEG child	0.5-2
Pesticides/PCBs			
Beta-BHC	0.083	-	0.5-2
Gamma chlordane	1.23	30 EMEG child	0.5-2

* Comparison Values: ATSDR Soil Comparison Values, unless otherwise noted

EMEG: Environmental Media Evaluation Guide

CREG: Cancer Risk Evaluation Guide

RMEG: Reference Dose Media Evaluation Guide

Table 2. Maximum Concentration of Selected Contaminants Detected in On-Site Monitoring Wells at Levels Above Drinking Water Standards, Lightman Drum Company Site, October 1990.

Volatile Organic Compounds	Maximum ($\mu\text{g/l}$)	Comp. Value (NJ MCL**) ($\mu\text{g/l}$)
Methylene Chloride	1,400	3
Acetone	1,020	-
1,2-trans-dichloroethylene	390	100
1,1,1-trichloroethane	454	30
Trichloroethylene	4,900	1
Tetrachloroethylene	2,010	1
Chlorobenzene	219	50
1,2-dichloroethane	302	2
Benzene	10,100	1
Toluene	3,160	1,000
Ethylbenzene	4,800	700
m-xylene	19,000	1,000
o,p-xylenes	22,500	1,000
Metals		
Cadmium	17	5
Chromium	1,110	100
Iron	77,500	300 ⁺
Manganese	340	50 ⁺

** New Jersey Maximum Contaminant Levels

⁺ Secondary drinking water standards (primarily aesthetic)

Table 3. Concentrations of Selected VOCs and Semi VOCs Detected in Five On-Site Monitoring Wells, Lightman Drum Site, Collected November 5, 1999.

Sample #	MW3	MW 9	MW 10	MW 5	MW 2	Maxi- mum	MCL* (NJ)
Volatile Organic Compounds ($\mu\text{g/l}$)							
Acetone	38	ND	19	ND	ND	38	-
1,1-Dichloroethylene	ND	ND	8	ND	ND	8	2
Chloroform	ND	ND	4	2	ND	4	-
1,1,1-Trichloroethane	6	ND	110	2	190	190	30
Trichloroethylene	54	ND	2,300	37	3,500	3,500	1
1,1,2-Trichloroethane	ND	ND	6	ND	ND	6	3
Benzene	ND	ND	120	ND	ND	120	1
Tetrachloroethylene	110	ND	1,500	130	2,800	2,800	1
Toluene	3	ND	400	ND	920	920	1,000
Chlorobenzene	6	ND	43	ND	87	87	50
Ethylbenzene	ND	ND	410	ND	3,900	3,900	700
Xylene (total)	6	ND	2,900	ND	43,000	43,000	1,000
cis-1,2-Dichloroethylene	270	ND	890	ND	590	890	70
Semi-volatile Organic Compounds ($\mu\text{g/l}$)							
Phenol	ND	ND	5	ND	5	5	-
1,3-Dichlorobenzene	ND	ND	4	ND	13	13	600
1,4-Dichlorobenzene	3	ND	8	ND	44	44	75
1,2-Dichlorobenzene	ND	ND	6	ND	28	28	600
2-Methylphenol	ND	ND	5	ND	12	12	-
4-Methylphenol	ND	ND	14	ND	20	20	-
2,4-Dimethylphenol	ND	ND	10	ND	150	150	-
1,2,4-Trichlorobenzene	4	ND	13	ND	110	110	9
Naphthalene	ND	ND	ND	ND	4	4	300
2-Methylnaphthalene	ND	ND	ND	ND	1	1	-

* New Jersey Maximum Contaminant Levels

- MCL not available

ND: Not detected

**ATSDR Plain Language Glossary
of Environmental Health Terms**

Revised -15Dec99

Absorption:	How a chemical enters a person's blood after the chemical has been swallowed, has come into contact with the skin, or has been breathed in.
Acute Exposure:	Contact with a chemical that happens once or only for a limited period of time. ATSDR defines acute exposures as those that might last up to 14 days.
Additive Effect:	A response to a chemical mixture, or combination of substances, that might be expected if the known effects of individual chemicals, seen at specific doses, were added together.
Adverse Health Effect:	A change in body function or the structures of cells that can lead to disease or health problems.
Antagonistic Effect:	A response to a mixture of chemicals or combination of substances that is less than might be expected if the known effects of individual chemicals, seen at specific doses, were added together.
ATSDR:	The A gency for T oxic S ubstances and D isease R egistry. ATSDR is a federal health agency in Atlanta, Georgia that deals with hazardous substance and waste site issues. ATSDR gives people information about harmful chemicals in their environment and tells people how to protect themselves from coming into contact with chemicals.
Background Level:	An average or expected amount of a chemical in a specific environment. Or, amounts of chemicals that occur naturally in a specific environment.
Biota:	Used in public health, things that humans would eat – including animals, fish and plants.
CAP:	See C ommunity A ssistance P anel.
Cancer:	A group of diseases which occur when cells in the body become abnormal and grow, or multiply, out of control.

Carcinogen: Any substance shown to cause tumors or cancer in experimental studies.

CERCLA: See Comprehensive Environmental Response, Compensation, and Liability Act.

Chronic Exposure: A contact with a substance or chemical that happens over a long period of time. ATSDR considers exposures of more than one year to be *chronic*.

Completed Exposure Pathway: See **Exposure Pathway**.

Community Assistance

Panel (CAP): A group of people from the community and health and environmental agencies who work together on issues and problems at hazardous waste sites.

Comparison Value: (CVs) Concentrations or the amount of substances in air, water, food, and soil that are unlikely, upon exposure, to cause adverse health effects. Comparison values are used by health assessors to select which substances and environmental media (air, water, food and soil) need additional evaluation while health concerns or effects are investigated.

Comprehensive Environmental Response, Compensation, and Liability

Act (CERCLA): CERCLA was put into place in 1980. It is also known as **Superfund**. This act concerns releases of hazardous substances into the environment, and the cleanup of these substances and hazardous waste sites. ATSDR was created by this act and is responsible for looking into the health issues related to hazardous waste sites.

Concern: A belief or worry that chemicals in the environment might cause harm to people.

Concentration: How much or the amount of a substance present in a certain amount of soil, water, air, or food.

Contaminant: See **Environmental Contaminant**.

Delayed Health Effect: A disease or injury that happens as a result of exposures that may have

occurred far in the past.

Dermal Contact:	A chemical getting onto your skin. (see Route of Exposure).
Dose:	The amount of a substance to which a person may be exposed, usually on a daily basis. Dose is often explained as “amount of substance(s) per body weight per day”.
Dose / Response:	The relationship between the amount of exposure (dose) and the change in body function or health that result.
Duration:	The amount of time (days, months, years) that a person is exposed to a chemical.
Environmental Contaminant:	A substance (chemical) that gets into a system (person, animal, or the environment) in amounts higher than that found in Background Level , or what would be expected.
Environmental Media:	Usually refers to the air, water, and soil in which chemicals of interest are found. Sometimes refers to the plants and animals that are eaten by humans. Environmental Media is the second part of an Exposure Pathway .
U.S. Environmental Protection Agency (EPA):	The federal agency that develops and enforces environmental laws to protect the environment and the public’s health.
Epidemiology:	The study of the different factors that determine how often, in how many people, and in which people will disease occur.
Exposure:	Coming into contact with a chemical substance.(For the three ways people can come in contact with substances, see Route of Exposure .)
Exposure Assessment:	The process of finding the ways people come in contact with chemicals, how often and how long they come in contact with chemicals, and the amounts of chemicals with which they come in contact.

Exposure Pathway: A description of the way that a chemical moves from its source (where it began) to where and how people can come into contact with (or get exposed to) the chemical.

ATSDR defines an exposure pathway as having 5 parts:

1. Source of Contamination,
2. Environmental Media and Transport Mechanism,
3. Point of Exposure,
4. Route of Exposure, and
5. Receptor Population.

When all 5 parts of an exposure pathway are present, it is called a **Completed Exposure Pathway**. Each of these 5 terms is defined in this Glossary.

Frequency: How often a person is exposed to a chemical over time; for example, every day, once a week, twice a month.

Hazardous Waste: Substances that have been released or thrown away into the environment and, under certain conditions, could be harmful to people who come into contact with them.

Health Effect: ATSDR deals only with **Adverse Health Effects** (see definition in this Glossary).

Indeterminate Public

Health Hazard: The category is used in Public Health Assessment documents for sites where important information is lacking (missing or has not yet been gathered) about site-related chemical exposures.

Ingestion: Swallowing something, as in eating or drinking. It is a way a chemical can enter your body (See **Route of Exposure**).

Inhalation: Breathing. It is a way a chemical can enter your body (See **Route of Exposure**).

LOAEL: **Lowest Observed Adverse Effect Level.** The lowest dose of a chemical in a study, or group of studies, that has caused harmful health effects in people or animals.

Malignancy: See **Cancer**.

MRL:	Minimal Risk Level. An estimate of daily human exposure – by a specified route and length of time -- to a dose of chemical that is likely to be without a measurable risk of adverse, noncancerous effects. An MRL should not be used as a predictor of adverse health effects.
NPL:	The National Priorities List. (Which is part of Superfund .) A list kept by the U.S. Environmental Protection Agency (EPA) of the most serious, uncontrolled or abandoned hazardous waste sites in the country. An NPL site needs to be cleaned up or is being looked at to see if people can be exposed to chemicals from the site.
NOAEL:	No Observed Adverse Effect Level. The highest dose of a chemical in a study, or group of studies, that did not cause harmful health effects in people or animals.
No Apparent Public Health Hazard:	The category is used in ATSDR's Public Health Assessment documents for sites where exposure to site-related chemicals may have occurred in the past or is still occurring but the exposures are not at levels expected to cause adverse health effects.
No Public Health Hazard:	The category is used in ATSDR's Public Health Assessment documents for sites where there is evidence of an absence of exposure to site-related chemicals.
PHA:	Public Health Assessment. A report or document that looks at chemicals at a hazardous waste site and tells if people could be harmed from coming into contact with those chemicals. The PHA also tells if possible further public health actions are needed.
Plume:	A line or column of air or water containing chemicals moving from the source to areas further away. A plume can be a column or clouds of smoke from a chimney or contaminated underground water sources or contaminated surface water (such as lakes, ponds and streams).
Point of Exposure:	The place where someone can come into contact with a contaminated environmental medium (air, water, food or soil). For examples: the area of a playground that has contaminated dirt, a contaminated spring used for drinking water, the location where fruits or vegetables are grown in

contaminated soil, or the backyard area where someone might breathe contaminated air.

Population: A group of people living in a certain area; or the number of people in a certain area.

PRP: **Potentially Responsible Party.** A company, government or person that is responsible for causing the pollution at a hazardous waste site. PRP's are expected to help pay for the clean up of a site.

Public Health Assessment(s): See **PHA**.

Public Health Hazard: The category is used in PHAs for sites that have certain physical features or evidence of chronic, site-related chemical exposure that could result in adverse health effects.

Public Health Hazard Criteria: PHA categories given to a site which tell whether people could be harmed by conditions present at the site. Each are defined in the Glossary. The categories are:

6. Urgent Public Health Hazard
7. Public Health Hazard
8. Indeterminate Public Health Hazard
9. No Apparent Public Health Hazard
10. No Public Health Hazard

Receptor Population: People who live or work in the path of one or more chemicals, and who could come into contact with them (See **Exposure Pathway**).

Reference Dose (RfD): An estimate, with safety factors (see **safety factor**) built in, of the daily, life-time exposure of human populations to a possible hazard that is not likely to cause harm to the person.

Route of Exposure: The way a chemical can get into a person's body. There are three exposure routes:

- breathing (also called inhalation),

- eating or drinking (also called ingestion), and
- or getting something on the skin (also called dermal contact).

Safety Factor:	Also called Uncertainty Factor . When scientists don't have enough information to decide if an exposure will cause harm to people, they use “safety factors” and formulas in place of the information that is not known. These factors and formulas can help determine the amount of a chemical that is <u>not</u> likely to cause harm to people.
SARA:	The Superfund Amendments and Reauthorization Act in 1986 amended CERCLA and expanded the health-related responsibilities of ATSDR. CERCLA and SARA direct ATSDR to look into the health effects from chemical exposures at hazardous waste sites.
Sample Size:	The number of people that are needed for a health study.
Sample:	A small number of people chosen from a larger population (See Population).
Source (of Contamination):	The place where a chemical comes from, such as a landfill, pond, creek, incinerator, tank, or drum. Contaminant source is the first part of an Exposure Pathway .
Special Populations:	People who may be more sensitive to chemical exposures because of certain factors such as age, a disease they already have, occupation, sex, or certain behaviors (like cigarette smoking). Children, pregnant women, and older people are often considered special populations.
Statistics:	A branch of the math process of collecting, looking at, and summarizing data or information.
Superfund Site:	See NPL .
Survey:	A way to collect information or data from a group of people (population). Surveys can be done by phone, mail, or in person. ATSDR cannot do surveys of more than nine people without approval from the U.S. Department of Health and Human Services.

Synergistic effect:	A health effect from an exposure to more than one chemical, where one of the chemicals worsens the effect of another chemical. The combined effect of the chemicals acting together are greater than the effects of the chemicals acting by themselves.
Toxic:	Harmful. Any substance or chemical can be toxic at a certain dose (amount). The dose is what determines the potential harm of a chemical and whether it would cause someone to get sick.
Toxicology:	The study of the harmful effects of chemicals on humans or animals.
Tumor:	Abnormal growth of tissue or cells that have formed a lump or mass.
Uncertainty Factor:	See Safety Factor .
Urgent Public Health Hazard:	This category is used in ATSDR's Public Health Assessment documents for sites that have certain physical features or evidence of short-term (less than 1 year), site-related chemical exposure that could result in adverse health effects and require quick intervention to stop people from being exposed.